SONY

Sony HDV Workflows

in Apple Final Cut Pro 6

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1 – Introduction

This document explains how to work with HDV™ format (MPEG2, Long GOP) based media utilizing Apple Final Cut Pro™ software. Three acquisition formats will be covered:

- CompactFlash® media (via the Sony HVR-MRC1K Memory Recording Unit)
- Sony HVR-DR60 Hard Disk Recording Unit
- Videotape

The Sony HVR-MRC1K Memory Recording Unit is an optional product for Sony's professional HDV or DVCAM™ camcorders. It comes standard with the HVR-Z7U and HVR-S270U camcorders. The HVR-MRC1K utilizes the widely-available standard CompactFlash card for HDV, DVCAM, and DV file recording.

The HVR-DR60 is an optional hard disk recording unit for Sony's professional HDV and DVCAM camcorders. Via an i.LINK®* cable connection, the HVR-DR60 can record HDV, DVCAM, or DV streams from the camcorder and store them as video files. The internal hard disk drive (HDD) offers a capacity of 60 GB, which translates into a recording time of approximately 4.5 hours (270 minutes) for HDV, DVCAM, and DV formats.

These non-tape recording products offer "Hybrid recording" which records video on both tape and non-tape media simultaneously. This Hybrid recording operation allows users to have tape for archiving and files for NLE work at one time.

For HDV recordings, both the HVR-MRC1K and the HVR-DR60 record MPEG-2 files with the extension ".M2T". The file conforms to the HDV1080i specification in which MPEG-2 MP@H-14 is used for its video codec and either MPEG-1 Audio Layer2 (for 2 ch) or MPEG-2 Audio Layer2 (for 4 ch) is used for the audio codec.

The HVR-MRC1K and HVR-DR60 both use FAT32 for their file system, which allows a Windows or Macintosh computer to recognize the recording media as an external drive without the need for additional driver software. As FAT32 has a maximum file size of 4 GB (approximately 20 minutes), recordings that exceed this capacity are automatically recorded as separate new files.

In the HVR-MRC1K Memory Recording Unit, all files are stored in a single folder. Each file is named according to the format: **xx_nnnn_YYYY-MM-DD_HHMMSS.extension**, as follows:

XX
A two-digit number (00 - 99) useful for numbering CF cards when more than 1 is used. This number can be changed via the menu of the HVR-MRC1K.

nnnn
A sequential clip number, incremented by one as each new recording begins.

*i.LINK is a trademark of Sony used only to designate that a product contains IEEE 1394 connector. All products with an i.LINK connector may not communicate with each other. Please refer to the documentation that comes with any device having an i.LINK connector for information on compatibility, operating conditions and proper connection.

YYYY_MM_DD_HHMMSS
The date and time of the recording (which are derived from the date and time data settings of the camcorder). Recordings separated due to FAT32 limitations will have new time data, but retain the same clip number.

The HVR-DR60 folder structure differs from CompactFlash media in that the HVR-MRC1K creates a new folder with an associated movie file **each** time a recording begins. For long clips that exceed the FAT32 file size specification, subsequent files are stored in the same folder. For ingest into Final Cut Pro, the **Sony Recording Unit RAD Plug-in** (available as a free download from the Sony Website) provides streamlined transfer of files from a CompactFlash card or HVR-DR60 within the Final Cut Pro **Log and Transfer** window. The software will reconnect M2T files that were divided by FAT32, and will also rename HVR-DR60 files in the same style as those from a CompactFlash card during the transfer.

Please note that the workflows outlined here represent just a few examples of how to work with the HDV format, and that workflows can vary based on the project and/or installation.

For more detailed information on any of the software or hardware mentioned in this document, please refer to the manufacturer-supplied Operations Guide for the associated product.

2 – Workflow Overview

CompactFlash Media & HVR-DR60

1– Import MPEG2 (or DV) files from CompactFlash media, or HVR-DR60 Hard Disk Recording Unit into FCP over **i.LINK cable** or **USB 2.0**.

2– Edit

3– Export to HDV videotape over **i.LINK cable**.

HDV Videotape

1– Capture HDV videotape-based media into FCP over **i.LINK cable**.

2– Edit

3– Export to HDV videotape over **i.LINK cable**.

Note: It is also possible to import DV data from the CompactFlash card, HVR-DR60, or videotape with same workflow.

Key Workflow Features and Restrictions

- Support for 1080 50/60i, 24/25/30p
- MPEG2 files from CompactFlash media and HVR-DR60 must be rewrapped as QuickTime® Movies. This is accomplished with the Final Cut Pro **Log and Transfer** tool.

System Requirements

- Apple OS X 10.4.11+
- Apple Final Cut Pro (FCP) 6.0.2+ and Sony Recording Unit RAD Plug-in (downloadable from Sony web site)
- CompactFlash Card reader or Memory Recording Unit from the camera, mounted in an i.LINK Cradle (such as the Sony HVR-MRC1K/HVRA-CR1)
- Sony HVR-DR60 Hard Disk Recording Unit
- Sony HVR-M35U or equivalent HDV recorder

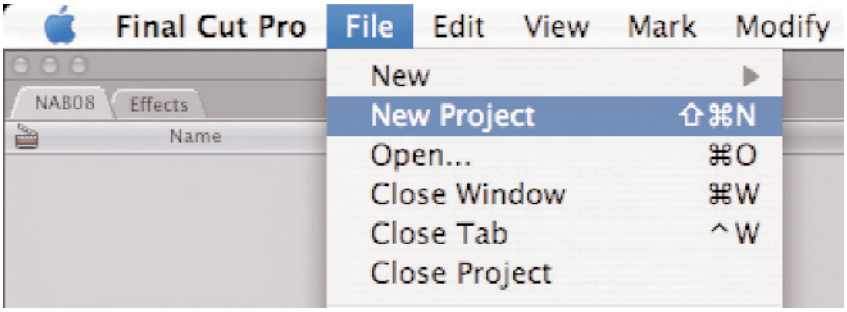
Connections

- When using CompactFlash media, connect the CompactFlash reader via a USB 2.0 cable or connect the memory recording unit cradle via an i.LINK (Firewire) cable.
- When using the Sony HVR-DR60, connect via an i.LINK (Firewire) cable.
- When using HDV videotape, connect the camcorder or deck via an i.LINK (Firewire) cable.

3 – Creating a Final Cut Pro Project

1– Launch Final Cut Pro software.

2– If not adding the HDV or DV material to an existing FCP Project, create a new Project by simultaneously pressing ⌘ **+ Shift + N**. Alternatively, use the mouse to select **File > New Project**. This will create a new project initially entitled "Untitled Project."



3– Save the Project to the computer hard drive. The standard location for this is in the /Users/username/Documents/Final Cut Pro Documents/ folder. During the Save process, change "Untitled Project" to something meaningful.

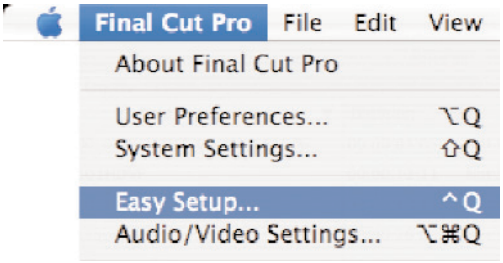
4– Verify the FCP Scratch Disk location and set according to your preference. Press **Shift + Q** to access this menu.

Note: The previous step is not an essential part of HDV or DV import, but is recommended as a "best practice" of media management.

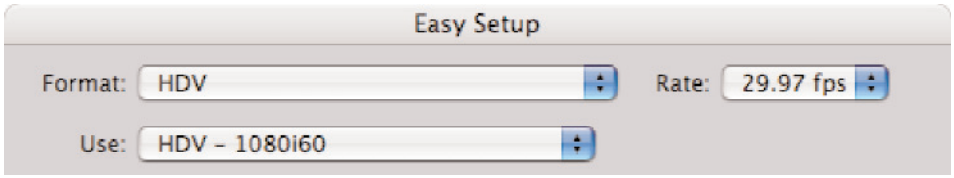
Sequence Preparation

Although not mandatory, it is typically best to set the FCP Sequence Settings to match the settings of the majority of your media, which puts less demand on the computer's CPU. The process is:

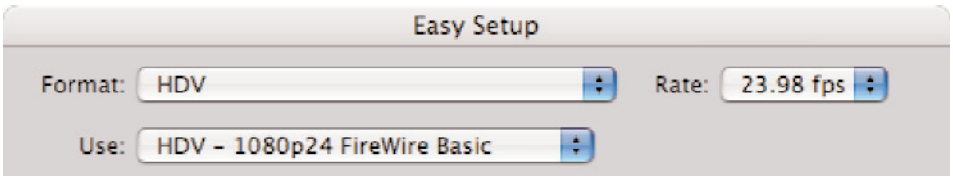
1– Select **Final Cut Pro > Easy Setup**.



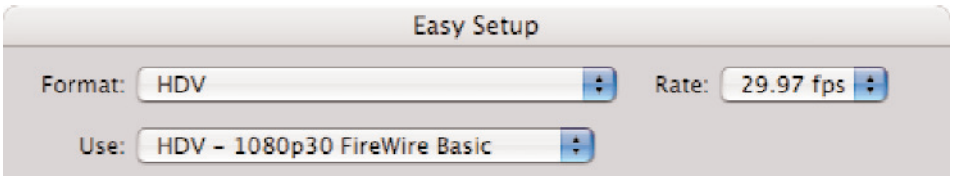
2– Select a **Format, Rate and Capture Preset** to match your material. Below are some examples:



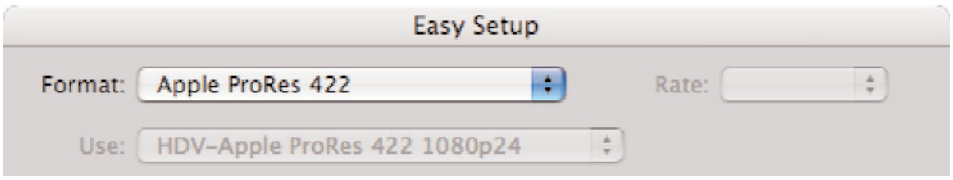
For HDV 1080i60 footage



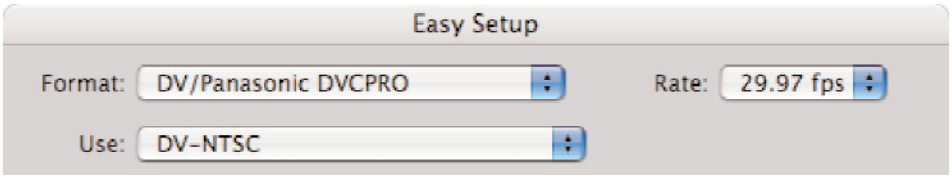
For HDV 1080p/24 native footage



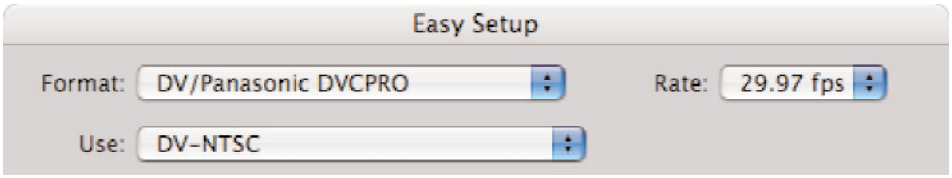
For HDV 1080p/30 native footage



For HDV 1080p/24A footage



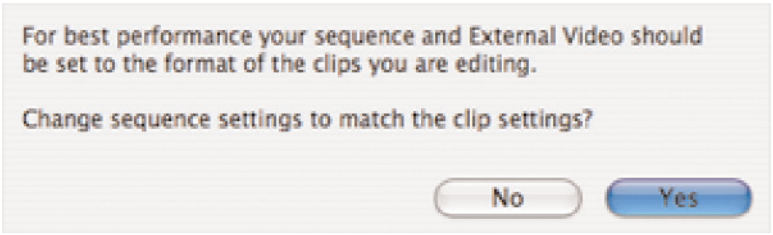
For 60i DV footage



For 60i DV anamorphic footage

3– Create a New Sequence by pressing ⌘ **+ N**. A new Sequence will be placed in the Browser, with the Sequence name highlighted. If desired, edit the default name to something meaningful.

If unsure of the proper preset to use, FCP will configure the Sequence automatically. For empty Sequences only, FCP analyzes the first clip that is entered in the Timeline and compares it against the current Sequence Settings. If there is a mismatch, the following will be displayed:


For best performance your sequence and External Video should be set to the format of the clips you are editing.
Change sequence settings to match the clip settings?
No
Yes

In most cases, select "**Yes.**"

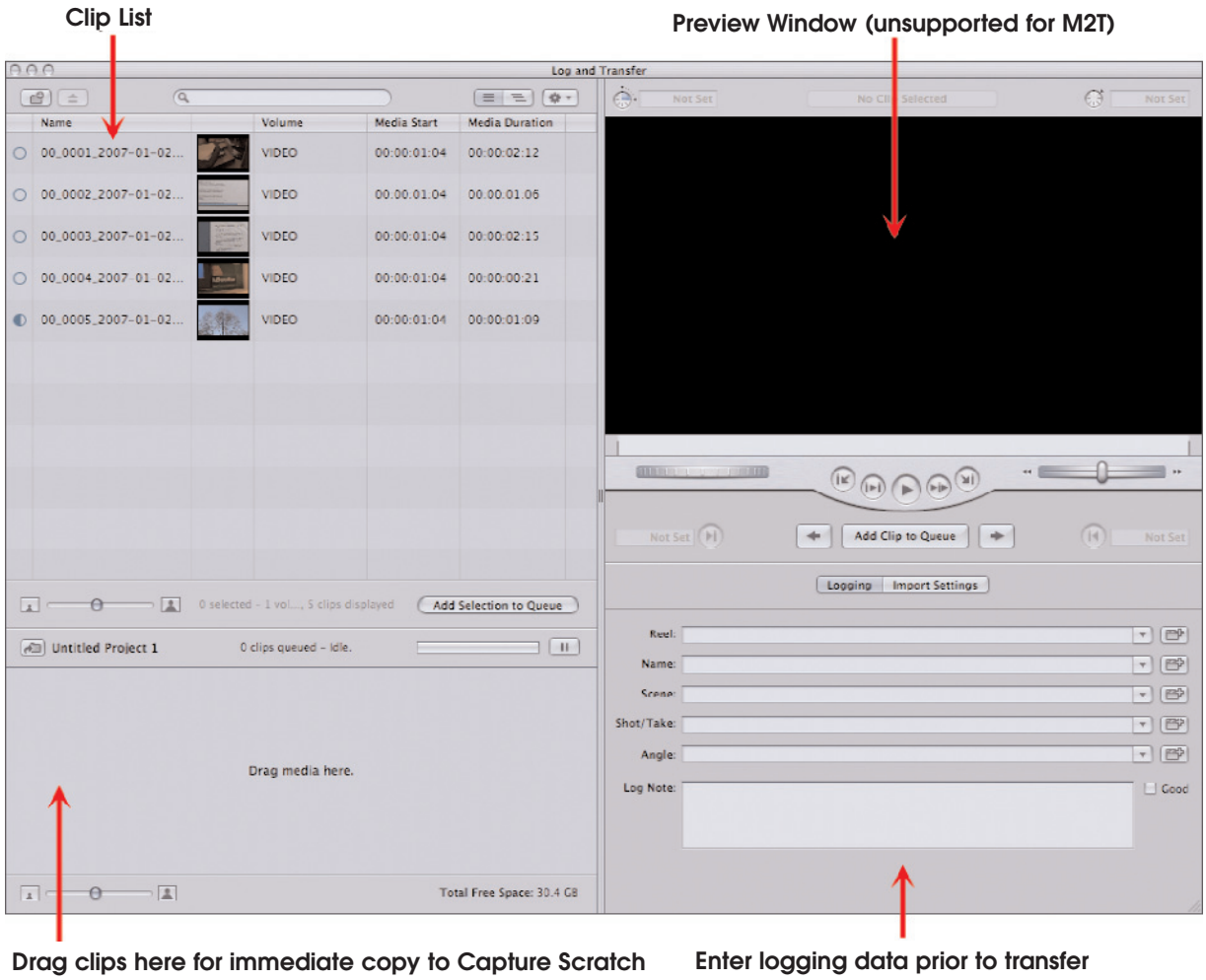
4 – Importing HDV Data Files

Log and Transfer Overview

Final Cut Pro requires M2T and DV files to be rewrapped to QuickTime Movie files and copied to the designated Capture Scratch location. This is accomplished with the integrated **Log and Transfer** tool. A brief overview of the interface is below.

Log and Transfer automatically scans for connected media, and displays clips in the **Clip List**.

Prior to transfer, additional logging information may be entered for a clip, along with preferences for Video and Audio import. For M2T files, the **Preview Window** is disabled. However, as shown below, static clip thumbnails are provided.



Note: Files recorded in "24A" mode of a camcorder will be transcoded to Apple Pro Res 422 format in order to remove 2:3 pull-down fields. For other modes such as native 24P, there is no transcoding during transfer.

For more detailed information, please consult the Apple Final Cut Pro User Manual.

From CompactFlash Media

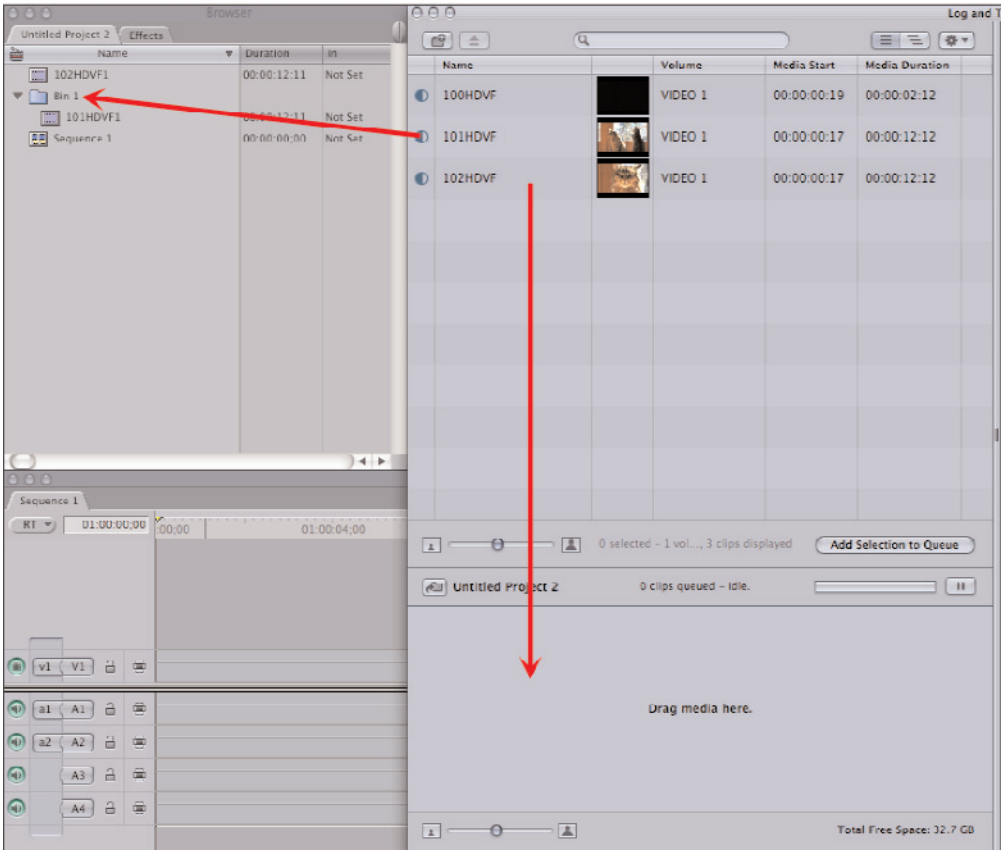
HDV is recorded on CompactFlash media as MPEG2 Transport Streams, with a file extension of ".M2T". As formatted by a camera, the card will appear on the Macintosh Desktop as a single Volume, entitled **VIDEO**.

Important: When archiving files from CompactFlash media, maintain the original folder structure.

1– Select **File > Log and Transfer**

2– Select the clips to import to FCP and drag them either to:

- The Import Queue below, which will enter the clips in the root Project Bin of the selected FCP project.
- Directly to a Bin.



In either case, the clips will be converted to QuickTime and copied to the FCP Capture Scratch.

From HVR-DR60

The Sony HVR-DR60 is a compact camera-mounted hard drive recording unit that records both DV and HDV footage, the latter as MPEG2 Transport Streams, with a file extension of ".M2T". The unit connects to the host computer via an i.LINK interface cable.

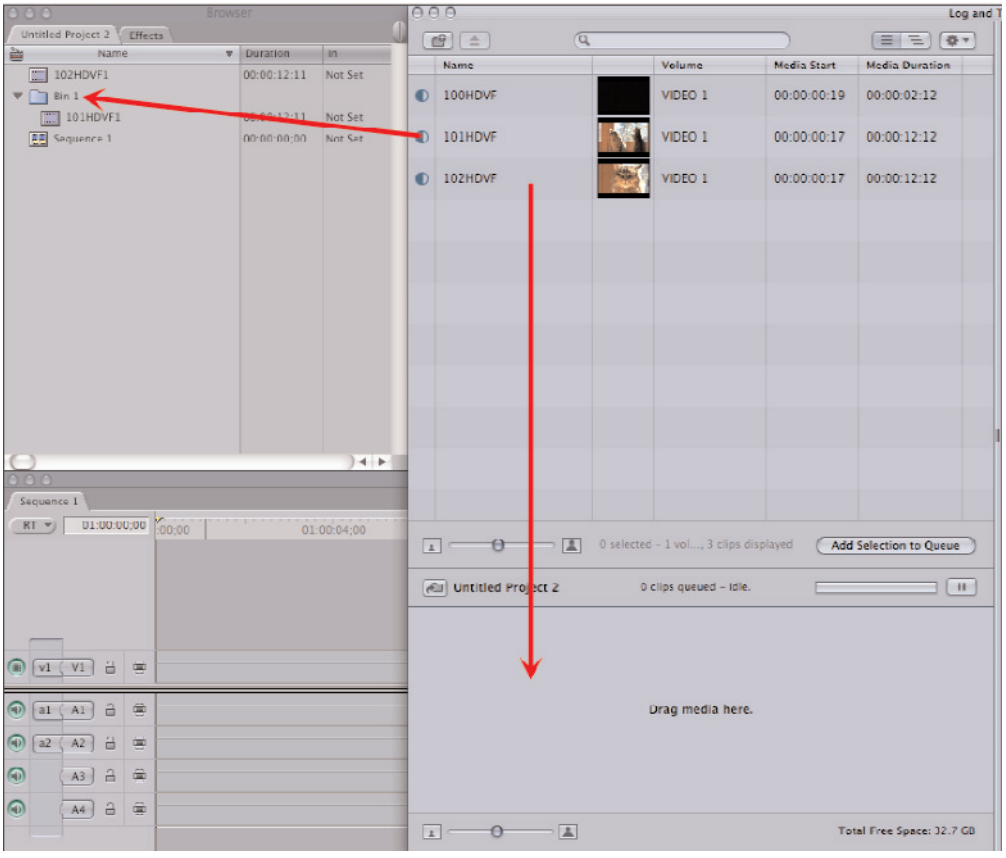
Set to the "computer" mode, the DR60 is seen by the Macintosh as two hard disk volumes: **VIDEO** and **USER**. For this operation, only the **VIDEO** folder will be utilized.

Important: When archiving files from the HVR-DR60, maintain the original folder structure.

1– Select **File > Log and Transfer**.

2– Select the clips to import to FCP and drag them either to:

- The Import Queue below, which will enter the clips in the root Project Bin of the selected FCP project.
- Directly to a Bin.

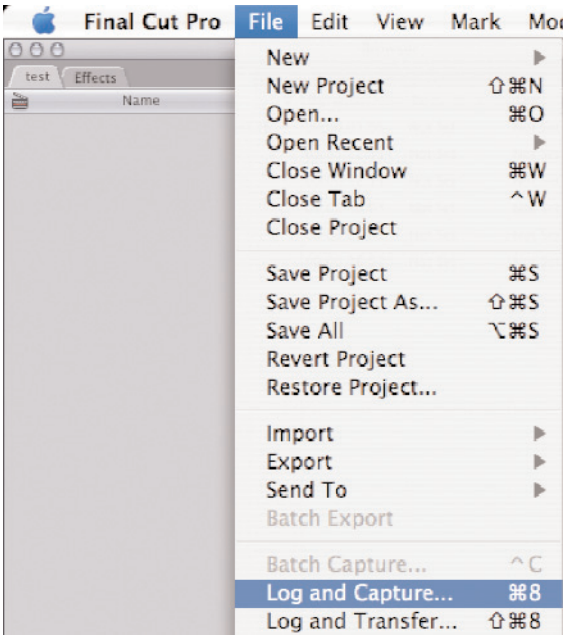


In either case, the clips will be converted to Quicktime and copied to the FCP Capture Scratch.

5 – Capturing Native HDV Video From Tape

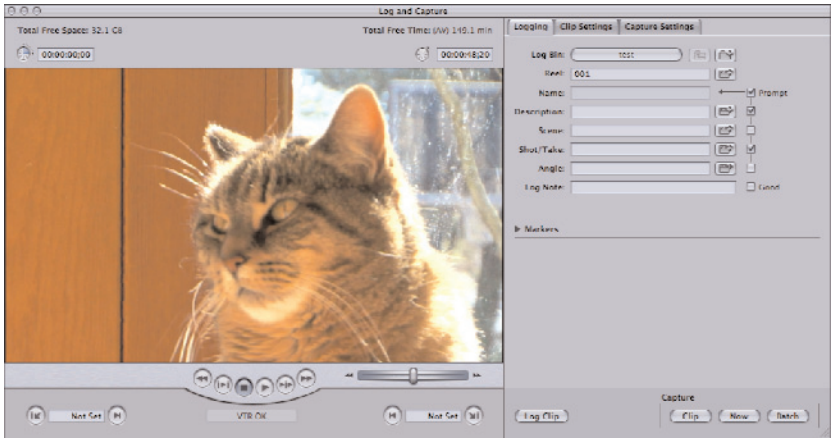
Before attempting to capture, select a relevant item from the Final Cut Pro Easy Setup list, as described on Page 7 of this document.

1– Select **File > Log and Capture**.



2– Using the transport controls, navigate the tape, set In and Out points, and enter logging information.

3– Select the **Capture Clip** button to immediately capture the clip.



Note: Footages recorded in "24A" mode of a camcorder will be transcoded to Apple Pro Res 422 format during the capturing process in order to remove 2:3 pull-down fields.

For more detailed information, please consult the Apple Final Cut Pro User Manual.

6 – Adding Clips to the Timeline

There are a variety of methods for placing clips in the timeline. For purposes of illustration, below are just a few methodologies:

To add a clip to a Sequence without trimming, simply drag the clip from the Bin to the Timeline.

To trim a clip prior to adding it to the Sequence:

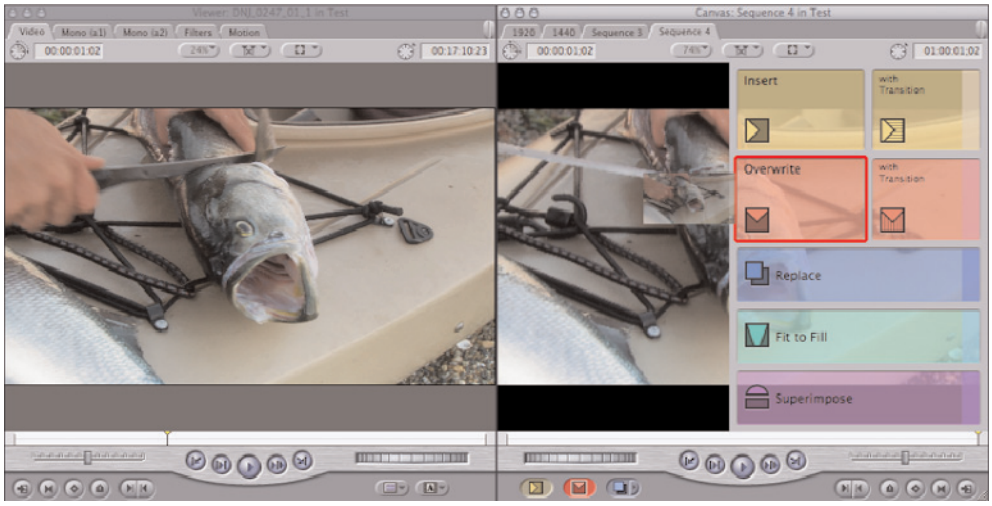
1– Double-click on a clip in the Browser. This will load the media into the Viewer window.

2– Play the clip by pressing either the spacebar or the L key.

3– Select the yellow Viewer Playhead and scrub to an exact In point. Press I to mark the In point.

4– Select the yellow Viewer Playhead and scrub to an exact Outpoint. Press O to mark the Outpoint.

5– Click and drag the image in the Viewer over to the Canvas window. (Notice that a thumbnail image appears under the cursor) An Edit Overlay will appear in the Canvas.



6– Continue dragging the thumbnail onto the red "Overwrite" section of the overlay, then release. The clip will be added to the Timeline.

7– Repeat for subsequent clips.

Tips: It is possible to record HDV on tape and DV on CompactFlash media / HVR-DR60 simultaneously by using the built-in downconverter of a camcorder.
The DV file has uncompressed L-PCM audio data unlike HDV using compressed audio. This means that you can use the DV file as high quality audio material if needed.

For more detailed information, please consult the Apple Final Cut Pro User Manual.

7 – Output to HDV Tape

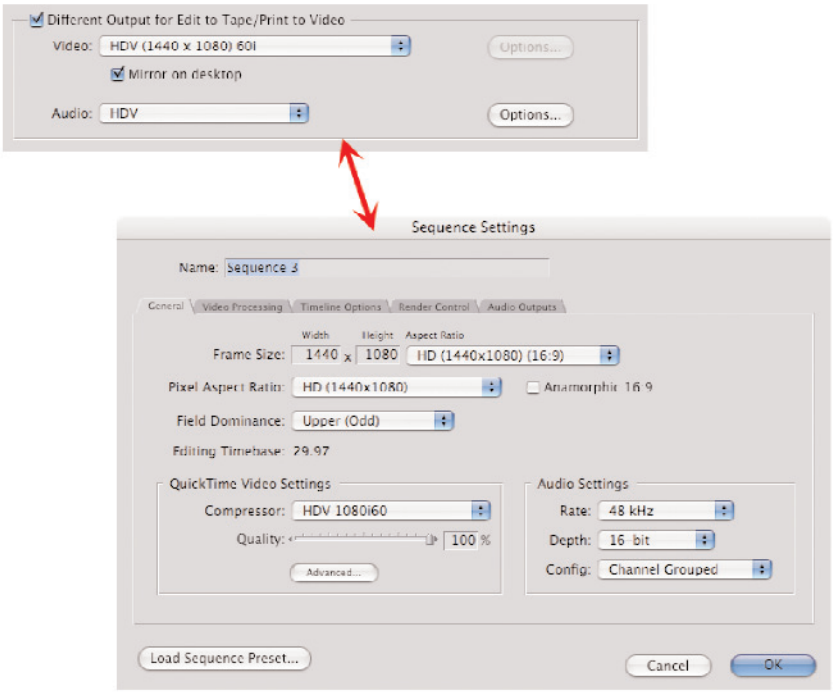
Output Settings

Before a FCP HDV sequence can be output to tape, several settings should be verified:

1– Select **Final Cut Pro > Audio/Video** Settings.

2– Select the **A/V Devices** tab.

3– Ensure that the settings for **Different Output for Edit to Tape / Print to Video** match that of the Sequence Settings.

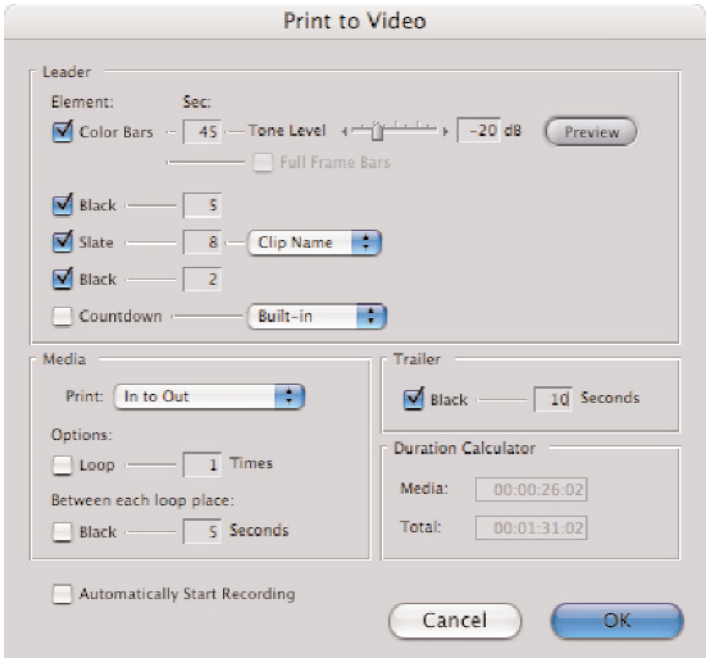


Exporting an Entire Sequence

1– In the Timeline, set In and Out points for the range to export.

2– Cue the HDV tape to a location suitable for recording.

3– Select **File > Print To Video**.



4– Enter settings to suit the project.

5– Select **OK** (or press **Enter**).

6– The sequence will render. When complete, Final Cut Pro will prompt the user to begin recording on the device.

Note: For HDV output over i.LINK cable, only Print To Video is supported.

8 – Notes

- When archiving files from the CompactFlash card or the HVR-DR60, maintain the original folder structure.
- Perform a software "Eject" of the HVR-DR60 media prior to powering-down or disconnecting the i.LINK cable.
- Perform a software "Eject" of the CompactFlash card prior to removing the card from the reader.

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